

COMPLETED

28 August 1964

25X1A MEMORANDUM TO: [REDACTED]
SUBJECT : NASA Contract with [REDACTED] for a "Virtual Image Display Unit" 25X1A

25X1A As you requested, I obtained a copy of the proposal for a virtual image display unit [REDACTED] submitted to NASA by [REDACTED] 25X1A

25X1A DESCRIPTION:

The display unit (only one is to be built) will consist of an optical system suitable for display of a virtual image to a pilot in a flight simulator. NASA plans to construct a spacecraft flight simulator around the display unit at a later date.

The display system will incorporate two 66" x 83" rear-projection screens capable of 60 l/mm and a gain of 5 and placed at right angles () to one another. One of the projection screens can be positioned to give the proper parallax for images from infinity to within 20 feet of the viewer. The other is fixed to provide images which will appear at an infinite distance to the person viewing.

Both projected images will be intercepted by refracting optics which will redirect them to a viewing lens. A 10" x 12" (approx.) window will be placed forward of this lens.

The proposal claims that there is no troublesome optical exit pupil limitation. This is possible if, as [REDACTED] computed, the viewing lens is 17" in diameter, f/0.8 and of high quality. Consequently, the image size will be large in ratio to head movement. 25X1A

The image characteristics attainable with this system are: perspective parallax, color, stereo and "a high degree of detail retention."

NASA specifications allow the contractor a maximum light loss through the optical system of 75% of input light -- 25% to be viewed by the observer.

DECLASS REVIEW by NIMA/DOD

DISCUSSION:

The first limitation derives from the rear-projection screens: their resolving capability immediately places a ceiling of 60 l/mm upon the system. With that restriction, quality magnifications of any great order (above 10X approximately) would not be possible.

Essentially the viewer utilizes the rear-projection screens as large projection lenses by adding optics out front which will create the virtual image. In terms of lenses alone, it is an expensive way of achieving realistic simulation. (If, as the NASA specifications state, the input information will be projected with only 300-watt lamps, the projection lenses will have to be fairly exceptional and costly to maintain the sort of contrast the contractor anticipates.)

The system would seem not to have application in our work and to our problems. Also, the sort of images that NASA is concerned about -- simulated stars against black sky, planets, moon and space vehicles -- are high-contrast and simple in comparison with the complex stimuli and patterns in aerial photographs.

Development Branch, P&DS

25X1A

SENDER WILL CHECK CLASSIFICATION TOP AND BOTTOM

UNCLASSIFIED CONFIDENTIAL SECRET

CENTRAL INTELLIGENCE AGENCY
OFFICIAL ROUTING SLIP

TO	NAME AND ADDRESS	DATE	INITIALS
1	[Redacted]	STATINTL	
2	NPIC/ P & DS		
3	Room 4N4N		
4	[Redacted]	STATINTL	
5			
6			

<input type="checkbox"/>	ACTION	<input type="checkbox"/>	DIRECT REPLY	<input type="checkbox"/>	PREPARE REPLY
<input type="checkbox"/>	APPROVAL	<input type="checkbox"/>	DISPATCH	<input type="checkbox"/>	RECOMMENDATION
<input type="checkbox"/>	COMMENT	<input type="checkbox"/>	FILE	<input type="checkbox"/>	RETURN
<input type="checkbox"/>	CONCURRENCE	<input type="checkbox"/>	INFORMATION	<input type="checkbox"/>	SIGNATURE

Remarks:

Rec open request - when you need some of project monitor in NASA call me & I will get it for you.

STATINTL

FOLD HERE TO RETURN TO SENDER

FROM:	[Redacted]	5606	DATE
LS/CR/	[Redacted]		21 Aug 64